



Strasbourg, 11th September 2023

T-PVS(2023)24

CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE
AND NATURAL HABITATS

Standing Committee

43rd meeting

Strasbourg, 28 November - 1 December 2023

**Eradication of the Ruddy Duck *Oxyura jamaicensis* in the
Western Palaearctic: 2023 progress report on implementation
of the 2021–25 action plan**

Draft analytical report

Document prepared by
Wildfowl & Wetlands Trust (WWT)

CONTENTS

Summary.....	- 3 -
1. Introduction	- 4 -
2. Assessing progress.....	- 5 -
3. Ruddy Ducks in the wild	- 5 -
4. Ruddy Ducks in captivity	- 10 -
5. Detailed situation in Tier 3 Contracting Parties	- 11 -
6. Conclusions and needs.....	- 13 -
7. Acknowledgements	- 15 -
8. References	- 15 -
Appendix 1: additional information provided by Tier 3 Contracting Parties	- 17 -
Appendix 2: information provided by Tier 1 and 2 Contracting Parties by email	- 20 -
Appendix 3: additional information provided by Tier 1 and 2 Contracting Parties	- 21 -
Appendix 4: questions and answers used in the questionnaire for Tier 3 Contracting Parties, 2023	- 22 -
Appendix 5: questions used in the questionnaire for Tier 1 and 2 Contracting Parties, 2023.....	- 25 -

Recommended citation:

Cranswick, PA, & C Hall. 2023. *Eradication of the Ruddy Duck Oxyura jamaicensis in the Western Palaearctic: 2023 progress report on implementation of the 2021–25 action plan*. Report to the Bern Convention.

Summary

Ruddy Duck *Oxyura jamaicensis* is an introduced species in Europe, where it is a significant threat to the White-headed Duck *Oxyura leucocephala*. Since the 1990s, the Bern Convention has championed a plan to eradicate Ruddy Ducks. Outcomes of the latest version of the plan are that Ruddy Duck is functionally extinct in the wild in the Western Palaearctic by 2025, and that the risk of accidental introductions is understood and minimized.

A questionnaire was distributed to Contracting Parties to assess progress against the plan in 2023. Responses were received from 22 parties. Experts from countries with resident populations met to review the situation in detail, and identified needs to meet the targets.

It is likely there are no more than 200 Ruddy Ducks in Europe – 110 in the Netherlands, 30 in France, 30 in Germany, 15 in the UK and 10 in Belgium. Just one bird was recorded elsewhere. There are around 30 breeding pairs – around five in France and at least 22 in the Netherlands – though these estimates are rather speculative. Occasional breeding in other countries now appears sporadic, with no more than one pair per country in any year.

There were notable positive developments regarding control. In particular, the hurdles to control in the Netherlands have been overcome and around 90 were controlled there, compared with just 30 per year previously. In France, a new trapping technique was successfully developed, using decoy birds in a floating cage. This approach has significant potential to be used outside winter (when birds do not flock), and notably at sites where shooting is problematic (eg in urban areas). An obvious concern, however, is the lack of effective control effort in Germany. Whilst birds there are widely distributed and there is currently little breeding, there is an urgent need to have effective control programmes underway.

A census of birds in captivity showed numbers in France had fallen by 85% since 2014, with just 16 birds remaining in 2022. There has, however, been little progress elsewhere, and the continued absence of basic data on numbers of birds in captivity in some countries is of obvious concern given several cases of known and suspected escapes in the wild in recent years.

Midway through this plan period, progress toward the target of Ruddy Ducks being functionally extinct in the wild by 2025 is estimated as follows:

- Belgium and the UK appear on the cusp of this position
- France is likely to reach this position in 2–3 years and the Netherlands in 4–5 years with continuation of their current programmes
- Germany could reach this position within 3–4 years if an effective control programme can be established quickly

National priorities are identified as:

- Belgium – continue the existing and effective reactive control measures
- France – continue the current proactive control measures to reduce the population further
- Germany – mobilise control activity: ensure need for control is recognised at the state level; ensure that practices and solutions to address the standard challenges to control are known by authorities; and clarify the picture regarding birds in captivity and improve the understanding of risk of escape
- The Netherlands – continue the newly intensified proactive control in Noord-Holland and Zuid-Holland, and deploy control in remaining areas with significant numbers of birds, so that numbers controlled are equal to or exceed the winter maximum; and clarify the picture regarding birds in captivity and improve the understanding of risk of escape
- UK – continue the existing and effective reactive control measures

A number of other recommendations for improving control in individual countries and collaboratively across the key countries are suggested.

1. Introduction

Ruddy Duck *Oxyura jamaicensis* is native to North America. Following escapes from captivity in the United Kingdom in the 1940s, a large population became established in the wild, and gradually expanded across parts of Europe, becoming one of the biggest threats to the globally endangered White-headed Duck *Oxyura leucocephala*, through hybridisation and competition (Green & Hughes 1996).

In the 1990s, the Council of Europe commissioned a review and an action plan for the eradication of the Ruddy Duck, under the Bern Convention (Hughes et al 1999). This plan has been revised at regular intervals.

Eradication targets and actions for Contracting Parties

The latest eradication plan, for the period 2021–25 (Cranswick & Hall 2020), sets out a series of outcomes, with targets and actions for Contracting Parties, according to different Tiers:

- Tier 3 – Contracting Parties with breeding and/or significant numbers of Ruddy Ducks (Belgium, France, Germany, the Netherlands, the United Kingdom).
- Tier 2 – Contracting Parties at significant risk of Ruddy Ducks arriving from Tier 3 countries (Austria, Czech Republic, Denmark, Hungary, Ireland, Italy, Luxembourg, Norway, Poland, Spain, Slovak Republic, Sweden, Switzerland).
- Tier 1 – all other Contracting Parties in the Western Palaearctic.

Concerning Ruddy Ducks in the wild

Outcome:

- The Ruddy Duck is functionally extinct in the wild in the Western Palaearctic by 2025.

Targets:

- Tier 3 countries: undertake active control to reduce the Contracting Party's Ruddy Duck population to be functionally extinct by 2025.
- Tier 2 countries: undertake rapid reactive control to eliminate any Ruddy Duck in the Contracting Parties' territory.

Actions for all Contracting Parties:

- Monitor the status and distribution of Ruddy Ducks in the wild annually.
- Provide sufficient resources to effectively monitor numbers of Ruddy Ducks in the wild.
- Provide sufficient resources to meet national control targets.
- Rapidly identify and resolve any problems that delay or undermine national control measures (eg site access, public perception).

Concerning Ruddy Ducks in captivity

Outcome:

- The risk of accidental introductions of Ruddy Ducks in the Western Palaearctic is understood and minimized.

Targets:

- The numbers of Ruddy Ducks in captivity is understood by 2022.
- The risks of accidental introduction are assessed by 2024.
- No new introductions of Ruddy Ducks occur.

Actions:

- Prevent the importing, selling and breeding of captive Ruddy Ducks.

- Identify the number of individual birds, and the keepers of all Ruddy Ducks.
- Assess the risk of release (eg from poor biosecurity).
- Identify and implement mitigation for major risks of release (eg establish secure facilities to which keepers could give their birds).

Concerning adaptive management and international co-ordination

Outcomes:

- Progress towards achieving the plan's outcomes and targets is regularly assessed and adaptively managed.
- Contracting Parties coordinate their activities to collectively achieve the plan's outcomes and targets in a timely and cost-effective manner.
- The plan is updated in 2025.

Actions for all Contracting Parties:

- Report annually to the Convention –
 - Regarding wild Ruddy Ducks: the status of non-breeding and breeding wild Ruddy Ducks; progress towards and the likelihood of achieving national control targets; problems encountered to achieving control targets and the solutions identified to address these.
 - Regarding captive Ruddy Ducks: the status of Ruddy Ducks in captivity; an assessment of risk of new introductions.

Actions for Tier 3 Contracting parties:

- Experts (from all Tier 3 Contracting Parties as a minimum) meet to review progress against control targets, identify impediments to control, agree solutions, and report to the Convention annually.

2. Assessing progress

To assess progress against the 2021–25 eradication plan, a questionnaire was sent to all Contracting Parties in early summer 2023. This comprised multiple-choice questions regarding progress and requested data on numbers of birds in the wild, in captivity, and how many had been controlled. There was a separate set of questions for Tier 3 countries (Appendix 4), with a shorter set for Tiers 1 and 2 (Appendix 5),

Responses were received from the following 22 countries:

- Tier 3 – Belgium, France, Germany, Netherlands, United Kingdom
- Tier 2 – Czech Republic, Denmark, Hungary, Norway, Poland, Spain, Sweden
- Tier 1 – Albania, Andorra, Croatia, Cyprus, Greece, Liechtenstein, Malta, Monaco, Montenegro (questionnaire not completed, results provided by email), Slovenia

A meeting was held of Tier 3 countries in June 2023, attended by technical experts from Belgium, France, Germany, the Netherlands and the United Kingdom, to consider progress and issues in more detail in these key countries.

3. Ruddy Ducks in the wild

Numbers of Ruddy Ducks observed in the wild and controlled by Contracting Parties since the previous eradication plan period (2016 – 2020) are given in Tables 1 to 3.

Table 1. Numbers of non-breeding Ruddy Ducks in Contracting Parties, 2019 to 2023.

Numbers are given as 'x, y, (z)', where x = number of birds, y = number of sites at which birds were found, and z = quality of estimate. Quality of estimate: 1 = coverage of sites largely complete and representative; 2 = partial coverage of sites only; 3 = expert guess. 'Winter' = 1 September to 31 March; 'Summer' = 1 April to 31 August. Data for summer 2023 are partial results, as responses were requested midway through the period. '?' = reported by respondent as 'unknown'; '-' = no answer provided.

	2019/20 Winter	2020 Summer	2020/21 Winter	2021 Summer	2021/22 Winter	2022 ¹ Summer	2022/23 ¹ Winter	2023 ¹ Summer
Tier 3								
Belgium	8, 6 (2)	8, 6 (2)	5, 2 (2)	6, 5 (2)	10, 9 (2)	9, 8 (2)	6, 1 (2)	7, 3 (2)
France	57, 1 (1)	30, 15 (3)	14, 1 (1)	13, 11 (2)	59, 1 (1)	21, 10 (2)	28, 1 (1)	18, 3 (2)
Germany	13, 11 (2)	9, 9 (2)	12, 10 (2)	5, 4 (2)	13, 11 (2)	16, 10 (2)	17, 14 (2)	8, 9 (2)
Netherlands	≥100- 120, ≥15 (3)	≥80, ≥30 (3)	≥100- 120, ≥15 (3)	≥75, ≥28 (3)	112, 13 (1)	>75, >28 (3)	108, 8 (1)	>75, >28 (3)
United Kingdom	12, 12 (2)	12, 12 (3)	14, 8 (2)	14, 14 (3)	14, 15 (2)	14, 10 (3)	13, 10 (2)	13, 7 (3)
Tier 2								
Czech Republic	1, 1 (1)	1, 1 (1)	1, 1 (1)	0, 0 (1)	0, 0 (1)	0, 0	0, 0	0, 0
Denmark	0, 0 (3)	0, 0 (3)	0, 0 (3)	0, 0 (3)	2, 2 (3)	2, 2	1, 1	0, 0
Hungary	1, 1 (1)	0, 0 (1)	0, 0 (1)	1, 1 (1)	0, 0 (1)	0, 0	0, 0	0, 0
Norway	0, 0 (3)	0, 0 (3)	0, 0 (3)	0, 0 (3)	0, 0 (3)	0, 0	0, 0	0, 0
Poland	0, 0 (1)	1, 1 (1)	4, 3 (1)	0, 0 (1)	0, 0 (1)	1, 1	0, 0	0, 0
Spain	0, 0 (1)	1, 1 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	1, 1	0, 0	0, 0
Sweden	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0	0, 0	0, 0
Switzerland	0, 0 (1)	0, 0 (1)	4, 3 (1)	1, 1 (1)	2, 2 (1)	1, 1 (1)	-, -	-, -
Tier 1								
Albania	0, - (-)	0, - (-)	0, - (-)	0, - (-)	0, - (-)	0, 0	0, 0	0, 0
Andorra	0, 0 (2)	0, 0 (2)	0, 0 (2)	0, 0 (2)	0, 0 (2)	0, 0	0, 0	0, 0
Bosnia and Herzegovina	0, - (-)	0, - (-)	0, - (-)	0, - (-)	0, - (-)	0, - (-)	-, -	-, -
Croatia	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0	0, 0	0, 0
Cyprus	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0	0, 0	0, 0
Estonia	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	-, -	-, -
Finland	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	1, 1 (1)	-, -	-, -
Greece	?, ? (3)	?, ? (3)	?, ? (3)	?, ? (3)	?, ? (3)	0, 0	0, 0	0, 0
Iceland	0, 0 (1)	1, 1 (1)	1, 1 (1)	2, 2 (1)	1, 1 (1)	2, 2 (1)	-, -	-, -
Liechtenstein	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0	0, 0	0, 0
Malta	0, - (-)	0, - (-)	0, - (-)	0, - (-)	-, - (-)	-, - (-)	0, 0	0, 0
Monaco	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0	0, 0	0, 0
Montenegro	-, - (-)	-, - (-)	-, - (-)	-, - (-)	-, - (-)	0, 0	0, 0	0, 0
Portugal	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	-, - (-)	-, - (-)	-, -	-, -
Serbia	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	-, -	-, -
Romania	-, - (-)	-, - (-)	-, - (-)	-, - (-)	-, - (-)	-, - (-)	-, -	-, -
Slovenia	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0	0, 0	0, 0
Türkiye	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	0, 0 (1)	-, -	-, -

Footnotes to Table 1

¹ Tiers 1 & 2 were asked to provide individual records of birds seen for the period 1 April 2022 up to the date the questionnaire was completed in 2023 (records have been assigned to the appropriate season in the table), or report a nil count for the whole period. Quality of estimate was not requested.

² Switzerland, Estonia, Finland, Iceland, Portugal, Serbia, Romania and Türkiye did not complete the questionnaire in 2023. The data presented in Table 1 are taken from the 2022 progress report.

³ Montenegro did not complete the questionnaire in 2023 but instead provided a response by email.

Table 2. Numbers of breeding Ruddy Ducks in Tier 2 and 3 Contracting Parties, 2020 and 2023.

Numbers are given as ‘x, y, (z)’, where x = pairs of birds, y = number of sites at which birds were found, and z = quality of estimate. Quality of estimate: 1 = coverage of sites largely complete and representative; 2 = partial coverage of sites only; 3 = expert guess. ‘?’ = reported by respondent as 'unknown'; '-' = no answer provided.

	2020	2021	2022 ¹	2023 ¹
Tier 3				
Belgium	0, 0 (2)	0, 0 (2)	0, 0 (2)	0, 0 (2)
France	10, - (3)	2, - (3)	5, - (3)	2, 1 (3)
Germany	1, 1 (2)	0, 0 (2)	0, 0 (2)	0, 0 (2)
Netherlands	≥20, ≥13 (3)	≥22, ≥15 (3)	>22, >15 (3)	>22, >15 (3)
United Kingdom	2, 2 (2)	1, 1 (2)	1, 0 (2)	1, 0 (3)
Tier 2				
Czech Republic	2, 2 (1)	2, 2 (1)	0, 0	0, 0
Denmark	0, 0 (3)	0, 0 (3)	0, 0	0, 0
Hungary	0, 0 (1)	0, 0 (1)	0, 0	0, 0
Norway	0, 0 (3)	0, 0 (3)	0, 0	0, 0
Poland	0, 0 (1)	0, 0 (1)	0, 0	0, 0
Spain	0, 0 (1)	0, 0 (1)	0, 0	0, 0
Sweden	0, 0 (1)	0, 0 (1)	0, 0	0, 0
Switzerland ²	0, 0 (1)	0, 0 (1)	0, 0 (1)	-, -

Footnotes

¹ Tier 2 countries were asked to provide individual records of breeding pairs for the period 1 April 2022 up to the date the questionnaire was submitted in 2023, or report a nil count for the whole period. Quality of estimate was not requested.

² Switzerland did not complete the questionnaire in 2023. The data presented in Table 2 are taken from the 2022 progress report.

Of the Tier 1 countries that responded to the questionnaire in 2023, none of the countries reported breeding pairs of Ruddy Ducks (for period 1 April 2022 to the date of questionnaire submission) nor had any of these countries recorded any in previous years (see the 2022 progress report).

Table 3. Numbers of Ruddy Ducks controlled in Contracting Parties, 2019 to 2023.**a) Total numbers of Ruddy Ducks controlled in Tier 1 and 2 countries**

Numbers are given as 'x, y', where x = numbers of birds controlled, and y = number of sites at which birds were controlled. The reporting periods run from 1 September to 31 August. '?' = reported by respondent as 'unknown'; '-' = no answer provided.

	2019/20	2020/21	2021/22 ¹	2022/23 ¹
Tier 1				
Belgium	2, 2	2, 1	2, 2	3, 2
France	88, 13	61, 15	10, 8	17, 14
Germany	1, 1	0, 0	2, 2	2, 2
Netherlands	33, 7	19, 4	35, 15	60, 17
United Kingdom	1, 1	0, -	1, 1	0, -
Tier 2				
Czech Republic	?, ?	?, ?	0, 0	0, 0
Denmark	6, 2	9, 4	9, ?	0, 0
Hungary	0, 0	0, 0	0, 0	0, 0
Norway	0, 0	0, 0	0, 0	0, 0
Poland	0, 0	0, 0	0, 0 ³	0, 0
Spain	1, 1	0, 0	0, 0 ⁴	0, 0
Sweden	0, 0	0, 0	0, 0	0, 0
Switzerland ²	0, 0	0, 0	0, 0	-, -

Footnotes

¹ Tier 2 countries were asked to provide records of birds culled for the period 1 April 2022 up to the date the questionnaire was completed in 2023 (records have been assigned to the appropriate year in the table).

² Switzerland did not complete the questionnaire in 2023. The data presented in Table 3 are taken from the 2022 progress report.

³ Poland reported that control of the bird seen in May 2022 was not attempted due to only a single adult male present.

⁴ Spain reported that control of the bird (a male) seen in April 2022 was not attempted due to it having moved from the site before culling activities began and it was not detected elsewhere.

b) Numbers of Ruddy Ducks controlled in Tier 3 countries by age and sex.

The reporting periods run from 1 September to 31 August.

	Age/sex	2019/20	2020/21	2021/22	2022/23
Belgium	adult males	1	1	1	2
	adult females	1	1	1	1
	first-year males	0	0	0	0
	first-year females	0	0	0	0
	unknown age/sex	0	0	0	0

France	adult males	25	25	5	6
	adult females	21	26	1	3
	first-year males	19	5	2	4
	first-year females	20	5	2	4
	unknown age/sex	3	0	0	0
Germany	adult males	0	0	0	1
	adult females	0	0	0	1
	first-year males	0	0	0	0
	first-year females	0	0	0	0
	unknown age/sex	1	0	2	0
Netherlands	adult males	11	2	14	1
	adult females	8	2	14	1
	first-year males	0		0	0
	first-year females	0	4*	0	0
	unknown age/sex	14	11	7	58
UK	adult males	0	0	1	0
	adult females	1	0	0	0
	first-year males	0	0	0	0
	first-year females	0	0	0	0
	unknown age/sex	0	0	0	0

*Four first-year males/females

Of the Tier 1 countries that responded to the questionnaire in 2023, none of the countries reported the control of Ruddy Ducks (for period 1 April 2022 to the date of questionnaire submission) nor had any of these countries recorded any in previous years (see the 2022 progress report).

No control of nests was undertaken in Tier 3 countries. This question was not asked of Tier 1 and 2 countries.

Table 4. Progress against targets and actions concerning Ruddy Ducks in the wild by Tier 3 Contracting Parties

Questions and answers below have been summarised slightly from the questionnaire for simplicity; see Appendix 4 for the full questions and possible answers. See also Appendix 1 for additional information provided by the countries.

	Belgium	France	Germany	Netherlands	United Kingdom
Q1 Will Ruddy Ducks be functionally extinct by 2025?	Yes	Yes	No	Yes	Yes
Q2 Are non-breeding birds monitored?	Largely	Largely	Partly	Completely	Completely
Q3 Do surveys provide an accurate assessment?	Largely	Completely	Largely	Completely	Completely
Q4 Are breeding birds monitored?	Partly	Partly	Largely	Partly	Largely

Q5 Do surveys provide an accurate assessment?	No	Partly	Largely	Partly	Largely
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4. Ruddy Ducks in captivity

Numbers of Ruddy Ducks held in captivity by Contracting Parties since the previous eradication plan period (2016 – 2020) are given in Table 6.

Table 5. Numbers of Ruddy Ducks in captivity Contracting Parties, 2020 and 2023.

Numbers are given as ‘x, y, (z)’, where x = number of birds, y = number of collections with birds, and z = quality of estimate. Quality of estimate: 1 = coverage of sites largely complete and representative; 2 = partial coverage of sites only; 3 = expert guess. ‘?’ = reported by respondent as ‘unknown’; ‘-’ = no answer provided.

	2020	2021	2022 ¹	2023 ¹
Tier 3				
Belgium	?, ? (3)	35, 7 (2)	?, ? (3)	?, ? (3)
France	40, 30 (3)	40, 30 (3)	40, 30 (3)	16, 7 (2)
Germany	19, 4 (2)	14, 4 (2)	12, 3 (2)	26, 5 (2)
Netherlands	?, ? (-)	?, ? (-)	?, ? (-)	?, ? (-)
United Kingdom	50, 20 (3)	50, 20 (3)	50, 20 (3)	40, 15 (3)
Tier 2				
Czech Republic	4, ? (2)	4, ? (2)	4, 2	4, 2
Denmark	?, ? (3)	?, ? (3)	4, 2	0, 0
Hungary	0, 0 (1)	0, 0 (1)	0, 0	0, 0
Norway	0, 0 (1)	0, 0 (1)	0, 0	0, 0
Poland	0, 0 (3)	0, 0 (3)	0, 0	0, 0
Spain	0, 0 (2)	0, 0 (2)	0, 0	0, 0
Sweden	0, 0 (1)	0, 0 (1)	0, 0	0, 0
Switzerland ²	?, ? (3)	?, ? (3)	?, ? (3)	-, -

Footnotes

¹ Tier 2 countries were not asked to provide a quality of estimate for the 2022 and 2023 data submitted in the 2023 questionnaire.

² Switzerland did not complete the questionnaire in 2023. The data presented in Table 4 are taken from the 2022 progress report.

All Tier 1 countries that responded to the 2023 questionnaire indicated that no Ruddy Ducks were known to be held in captivity in 2022 or 2023; nor have any been reported in these countries in previous years (see the 2022 progress report). See Appendix 3 for additional information provided by the Tier 1 and 2 countries regarding Ruddy Ducks in captivity.

Table 6. Progress against targets and actions concerning Ruddy Duck in held captivity by Tier 3 Contracting Parties.

Questions and answers below have been summarised slightly from the questionnaire for simplicity; see Appendix 4 for the full questions and possible answers. See also Appendix 1 for additional information provided by the countries.

	Belgium	France	Germany	Netherlands	United Kingdom
Q6 Are numbers in captivity and keepers known?	Partly	Yes	Poorly	poorly	Partly
Q7 When will numbers be accurately known?	2023 or 2024	Already in place	2025 or after	2025 or after	2025 or after ¹
Q8 What is the risk that a bird could escape?	Some risk	highly unlikely	unknown	unknown	some risk
Q9 How well is the risk of escape understood?	Reasonably	Reasonably	Not possible to assess	Not possible to assess	Reasonably
Q10 When will you be able to assess the risk of escape?	2024 or before	2024 or before	2027 or after	2027 or after	2025 or 2026
Q11 Have birds escaped from captivity in the last 18 months?	No	Yes	No	No	Yes

Footnotes

¹ United Kingdom indicated that it is unlikely that an accurate answer to the number held in captivity will ever be known; there is no requirement to register Ruddy Ducks if they are kept in private collections.

5. Detailed situation in Tier 3 Contracting Parties

A more detailed picture of the situation and control measures in Tier 3 Contracting Parties is provided below. Much of this information was provided at a Meeting of Experts in June 2023 (see Bern Convention 2023). This meeting is to allow adaptive management of the eradication programme, to clarify if progress is likely to meet the intended targets, and to agree and explore solutions where problems or delays arise.

For some aspects, the data presented by at the Meeting of Experts differed slightly from those provided in the questionnaires via the national focal points. Such differences are perhaps to be expected, given these have been compiled so soon after period on which they report. In general, we have used the data from the Meeting of Experts in the conclusions. The discrepancies are, in most cases, relatively minor and do not affect the general picture.

Belgium

Around 10 birds remain in the country, at two locations in the Flanders and one location in Wallonia, a similar picture to the previous five years. No breeding has been recorded in recent years, though the potential remains (birds are difficult to find in some regions, particularly in summer), and the authorities remain vigilant.

Following behavioural observations, authorities suspect that some of these birds were of captive origin, despite keeping Ruddy Ducks in captivity being illegal in Belgium.

The early warning and rapid response control system remains in place and is operating efficiently. Three birds were culled in 2022/23.

Exchange of information with neighbouring regions would be useful for managing control, particularly in the border area, where birds can be difficult to detect.

France

Since the implementation of the LIFE project (Oxyura against Oxyura, 2018-2023) in France, the number of Ruddy Ducks in the wild has reduced by 86%. Just 28 birds were recorded at the start of 2023. Numbers in winter 2022/23 were consistent with a continuing decline, following an unexpected increase in the previous winter (59 were recorded, compared with 14 the previous year). The increase is thought to be due to an influx of around 30 birds to Grand-Lieu Lac from another country, and a genetic analysis using new genetic markers is underway to identify the origin of those birds.

Five breeding pairs were recorded in 2022, a slight rise from 2021, and perhaps reflecting some birds remaining after the winter influx, although the technical expert reported approximately nine breeding attempts. Preliminary results recorded just two pairs in 2023, though all estimates of breeding in recent years are based largely on expert estimates.

Control operations intensified in 2022/23, but fewer birds were eradicated, as is to be expected given the fall in overall numbers. Some 18 adults were controlled, plus 19 young.

A prototype trapping system was deployed during 2023, using live decoys in a floating cage. This proved very effective and 11 birds were controlled, mainly males at the start of the breeding season, a time of year when it has been traditionally difficult to control birds. The trap is cheap to construct, and cameras mounted on the trap to detect caught birds means staff time is used efficiently.

A repeat of the 2014 census of captive birds was conducted in 2022 and showed a decrease of 85%. The captive population in France is now believed to number 16 birds at seven locations. In light of these findings, the captive population is no longer believed to constitute a threat.

Germany

A more comprehensive assessment of the status of Ruddy Duck in Germany was made, based on birdwatchers' observations, federal states' records and the European Alien Species Information Network Notification System. The revised estimate is approximately 30 individuals in the wild in Germany in 2022. Although there is a concentration in the North, birds are widely distributed across the country, with small numbers occurring at the same sites. There are difficulties in making an accurate estimate, but the population is thought to be stable. The last confirmed breeding record was in 2020, which was not successful.

Only two birds were culled in the last two years and efforts to eradicate birds remain low. Although control plans have been prepared for some regions, several have not been implemented. Technical problems around shooting, and that killing of birds is unpopular, are also barriers. Coordination of control is particularly challenging given the federal set up, but there are positive signs that this approach could be adopted. Initial steps were taken to organise a workshop at federal level to discuss actions needed for eradication in Germany.

Some 24 birds are known to be held in captivity, but data were only available from some states, and there is uncertainty over the true numbers. The requirements of the EU IAS Regulation should mean improved reporting in future.

The Netherlands

The estimated the national total in 2022/23 was 110 birds. Most are located in the west and the north of the country, though notably, 84 were concentrated at one site. This is a similar picture to the previous three winters. Accordingly, the estimate of breeding numbers remains the same.

Control is delegated to the Provinces, and is coordinated through an interprovincial working group, convened in recent years. All provinces now have a control programme. A significant development is that licences have now been issued to control birds in Natura 2000 sites, a key barrier until now. Control in these sites is only possible in some provinces currently, but it is aimed to extend this to all areas. Nevertheless, this change has enabled eradication efforts to be obviously intensified in Noord-Holland and Zuid-Holland, where most of the population is located.

Consequently, 89 birds were controlled in 2022/23, a marked increase on the 15–30 birds in the previous five years. The increase in control activities only began in 2023, so it is anticipated that the annual totals of controlled birds will be bigger in future years. Similarly, this control effort has therefore yet to translate into an obvious decrease in the total numbers – that change should be evident in figures from next winter.

United Kingdom

The population of Ruddy Duck in the United Kingdom remains very low – around 13 birds, mainly as individuals widely dispersed across different regions. There have only been a handful of breeding records in the last five years, and no breeding was confirmed in 2022/2023.

One bird was shot in 2022. To improve the speed and success of the response to future sightings, permissions are being sought in advance to access sites/land and to shoot (sightings frequently occur at the same sites). Monitoring will also be increased during the course of 2023 in an effort to increase the numbers of individuals eradicated. Low-level control (c€20K per year) is expected to be needed for a number of years before the few remaining birds die out.

The captive population is small, with only two owners known to the authorities.

6. Conclusions and needs

Status in the wild

It is likely there are no more than 200 Ruddy Ducks in Europe – 110 in the Netherlands, 30 in France, 30 in Germany, 15 in the UK and 10 in Belgium. Just one bird was recorded in Tier 2 countries (in Denmark) and none in Tier 1. Even allowing for birds that are undoubtedly overlooked, it seems reasonable to assume the total number away from the core countries is fewer than ten. Further, given those birds are probably wanderers from Tier 3 countries, the addition to the European total is likely nearer zero.

The total has hovered around 200 for several winters in succession, in part because of the varying quality of some previous estimates and regional movements perhaps confounding the picture. The latest estimate is thought to be the most accurate to date, and it feels reasonable to place a good degree of confidence in this figure. Given the step change in control efforts in the Netherlands since winter 2022/23, the real number may now be nearer 150 and should fall steadily in the next few years.

There are around 30 breeding pairs – around five in France and at least 22 in the Netherlands – though these estimates are rather speculative. Occasional breeding in other countries now appears sporadic, with no more than one pair per country in any year. Thirty pairs may be an underestimate, given 200 individuals in winter, and that half the birds controlled in France were young (19 young versus 18 adults). There clearly remains the potential for the population to increase rapidly without continued and focused control efforts.

Control

There have been notable positive developments in the last year. In particular, the significant hurdles to control in the Netherlands have been overcome, enabling a large increase in the number controlled (from around 30 per year to 90). This number needs to be higher still – based on experience elsewhere, the number culled each year needs to be similar to the winter maximum to bring about a substantial decline – but this should now be achievable. In France, control has been very successful in recent years, but remains challenging given the size of the main wintering site and that birds are distant. A new trapping technique has proved successful, using decoy birds in a floating cage. Indeed, this approach has significant potential to be used outside winter (when birds do not flock), at a variety of sites, and notably at sites where shooting is problematic (*eg* in urban areas).

A reactive control programme has been in place in the UK for many years, keeping the population at a low level. Control is challenging, however, given that the remaining birds are mobile, so are seen infrequently and often remain only briefly at an individual site. Permissions will therefore be secured in advance for sites known to be used by the birds, so that access and the use of firearms will be immediately possible when a bird is sighted, rather than delayed by procedural issues, by when the bird may have moved on.

A priority concern is the lack of concerted, widescale and coordinated control effort in Germany. Key is to ensure that each state enacts its responsibilities and is supported to overcome technical and political challenges. The issues are not novel, and have been successfully addressed by all other Tier 3 countries. Whilst the birds in Germany appear widely distributed and there is currently little breeding, there is an urgent need to have effective control programmes underway to prevent the obvious potential for the population in Germany to increase.

Captive birds

There has been significant progress to reduce the number of birds in captivity in France in recent years. A census in 2022 found just 16 birds at seven premises, a decrease of 85% since 2014. In light of these findings, the captive population is no longer believed to constitute a threat.

There have been known escapes, and several cases where escapes have been suspected, in recent years. There is a clear need to manage this risk better. The continued absence of basic data on numbers of birds in captivity in some countries is of obvious concern.

Progress towards targets and priority needs

The plan outcome for birds in the wild is that the Ruddy Duck is functionally extinct by 2025. Midway through the current plan period, an assessment of this target being achieved is provided –

- The UK and Belgium appear on the cusp of this position – there are very few birds, they occur as individuals and are widely spread, breeding is now rare and sporadic, and reactive control programmes are well-established and function effectively.
- Continuation of the existing control practice and effort in France should see this position reached within 2-3 years.
- The Netherlands now has the necessary measures in place to reach this position also, though it remains to be seen how quickly this can be achieved. Experience from other countries suggests it may be four to five years of proactive control before the population reaches such levels, even with a high control effort.
- The picture in Germany suggests it may also be close to the target, given the population comprises mainly individuals that are widely dispersed and breeding occurs only sporadically. The population is still relatively large, however, and, crucially, the lack of a functioning and coherent control programme means it cannot be said that the country is actively in control of the situation. It is likely to take a year or two before that control programme is properly established and perhaps another year or two before the population is reduced to the extent that it could be considered functionally extinct.

A key footnote is that a reactive control programme will still be required once the national population reaches the target level. Whilst this will require only a low level of effort to maintain, experience from the UK suggests this may be needed for 10 or more years for the population to die out through a combination of control and natural mortality.

The plan outcome for birds in captivity is that the risk of accidental introductions of Ruddy Ducks in the Western Palaearctic is understood and minimized.

Progress towards this goal is patchy. The great majority of captive birds are found in Tier 3 countries. Where the captive population size is known, the numbers are far lower than the estimates from five years ago. Confidence around these figures is often low, however, and the risk of escape remains in countries. Whilst France has made good progress to reducing the captive population, the lack of basic information about captive birds for others, notably in the Netherlands, is of concern. Whilst EU legislation will increasingly address the issue of captive birds, known and suspected escapes in recent years highlight the need for increased efforts to reach this goal.

National priorities –

Belgium

- Continue the existing and effective reactive control measures

France

- Continue the current proactive control measures to reduce the population further

Germany

- Mobilise control activity: ensure need for control is recognised at the state level; ensure that practices and solutions to address the standard challenges to control are known by authorities
- Clarify the picture regarding birds in captivity and improve the understanding of risk of escape

The Netherlands

- Continue the newly intensified proactive control in Noord-Holland and Zuid-Holland, and deploy control in remaining areas with significant numbers of birds, so that numbers controlled are equal to or exceed the winter maximum
- Clarify the picture regarding birds in captivity and improve the understanding of risk of escape

UK

- Continue the existing and effective reactive control measures

Additional needs and recommendations –

- Explore using the trapping method developed in France at sites and times of year where shooting is problematic
- Target control of females where possible, particularly when undertaking control of small groups; this approach is also relevant when control enters the reactive phase and the number of birds nationally is small
- Share data between adjacent regions of countries (notably France and Belgium) where there is regular cross-border movement to enable more effective control
- Arrange permissions in advance for control at sites regularly used by Ruddy Ducks to allow rapid control when birds are sighted
- Contribute genetic material from controlled birds for the study to determine the origin of the influx of birds to France in winter 2021/22
- Hold a workshop in Germany so state authorities can benefit from experience and best practice in other countries to address the challenges for control, and to mobilise a coherent and coordinated national programme

The EU Life project team in France has applied for an extension to the existing project, to continue control operations in the country. It also includes proposals for the creation of a European transboundary dashboard to record Ruddy Duck observations and culling operations; a technical workshop and field training on control for countries facing challenges with eradication; and the production of short documentaries to demonstrate control techniques.

7. Acknowledgements

We are grateful to the Contracting Parties and technical experts for providing information for this review, via the questionnaire and subsequent emails. We are also grateful to the technical experts from Tier 3 Contracting Parties for their participation in the Meeting of Experts and insights to issues in those countries. We thank the Bern Secretariat for their helpful assistance throughout this review.

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Appendix 1: additional information provided by Tier 3 Contracting Parties

The following is the additional information (written verbatim) provided. Not all countries provided additional information for every question.

- Q1: Will Ruddy Ducks be functionally extinct in your country by 2025? If your answer is 'No - it is unlikely', please list the problems or barriers

Belgium	We have not seen breeding in the last four years (although in 2022 a breeding attempt was probably prevented by shooting) and numbers of birds are consistently low in summer as well as in winter (<10 reports per year). There is actually no real "Belgian population" and birds we are confronted with are either spill-over from neighbouring countries or isolated escaped birds.
Germany	Ruddy Ducks appear very sporadically and in low numbers during the year (single specimens). Shooting is sometimes complicated on the large water bodies due to dangerous ricochets and waves. Shooting is difficult for reasons of public safety and the sudden appearance and frequent relocation of the animals.

- Q2: Are the status and distribution of non-breeding Ruddy Ducks monitored in the wild in your country? (surveys at any time of year to assess numbers present). If your answer is 'Partly' or 'No', please explain why and list the actions being taken to address this.

Belgium	Coverage by birders of most wetlands where ruddies have been observed is good, locations where they are in winter are known and if these areas are counted for the wintering waterbird census any ruddies should be reported. Number reported through these surveys are very low.
Germany	Several monitoring systems for birds are established in Germany (e.g. reporting platform Ornitho.de, DDA bird monitoring). However, due to rare detections there is no specific monitoring for the ruddy duck throughout all sites and all seasons of the year.
Netherlands	SOVON report on monitoring winter 22/23 https://pub.sovon.nl/pub/publicatie/21290

- Q3: Do the surveys provide an accurate assessment of non-breeding Ruddy Duck numbers and status in your country? If your answer is 'Partly' or 'No', please explain why and list the actions being taken to address this.

Netherlands	SOVON report on monitoring winter 22/23 https://pub.sovon.nl/pub/publicatie/21290
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- Q4: Are the status and distribution of breeding Ruddy Ducks monitored in the wild in your country? (Surveys specifically to record breeding occurrence and assess numbers of breeding pairs.) If your answer is 'Partly' or 'No', please explain why and list the actions being taken to address this.

Belgium	There are no specific visits to prior known breeding areas for detecting ruddy ducks. However, coverage of those areas is good. For instance, de Blankaart nature reserve is a marsh where plenty of birders go and no ruddy would go unnoticed. Antwerp
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	Harbour area, another hot spot, is professionally monitored. There are vast freshwater marshes in the province of Limburg, sometimes inaccessible to the public, where breeding might go unnoticed so surveys would be useful there. One example is De Luysen-Stamprooierbroek (Bree) near the Dutch border, where isolated birds have been reported.
Netherlands	There is no survey for breeding Ruddy Ducks like the survey for non-breeding ones. But still there are surveys for breeding birds in general. These survey are often performed by volunteers. They do not always recognize the Ruddy Duck and sometimes they deliberately withhold information. In some of the provinces there are (semi) professional surveys; birders who count all the waterbirds (South-western Delta), they recognise the Ruddy Duck and give the information to the authorities.
United Kingdom	All the breeding birds are not always detected, but the proportion of juveniles in the wintering population informs us on the breeding success. It is sufficient to get a good picture of the dynamics of this population.

- Q5: Do the surveys provide an accurate assessment of breeding Ruddy Duck numbers and status in your country? If your answer is 'Partly' or 'No', please explain why and list the actions being taken to address this.

Belgium	There is still the possibility of breeding going unnoticed although suitable areas are generally well covered by birders (and citizen science platforms).
United Kingdom	Same argument

- Q6: Is the number of captive Ruddy Ducks and keepers in your country known? If your answer is 'Partly' or 'Poorly', please explain the issues and list the actions being taken to address these.

Belgium	The situation has not changed since last year. When the EU regulation came into place, holders were required to get a permit for keeping. The government made various announcements on this obligation through bird keeper organizations. The requests identified 7 holdings (all in 2017, with no since), for no more than 35 birds. In accordance with the EU regulation, these birds cannot be used for breeding and can only be kept until the end of their natural lives. Other holdings may remain unnoticed, although no ruddy ducks have been encountered during inspections. The captive population is now considered to be phasing out, and is not considered an important risk anymore.
Germany	The number of Ruddy Ducks in private collections is mostly not known because it is not notifiable. Please note that the number of birds reported in Section III. "Birds in Captivity" increased as new information on captive birds became available.
Netherlands	EU regulation 1143/2014 forbids the keeping or breeding of the ruddy duck as of August 2016. There is a transitional provision for individuals that were kept when the species was placed on the Union list; these may be kept until their natural death provided that they do not escape and do not breed. It is unknown how many

	individuals were kept in 2016, and how many are still alive today. No permits were issued for breeding.
United Kingdom	No data held but numbers appear to be in decline.

- Q8: What is the risk that a bird could escape from captivity? If your answer is 'some risk' or 'low', please list the actions being taken to address this.

Belgium	Regional nature inspection services perform checks of facilities for compliance with the provisions of the EU Regulation (when alerted). This way, at least one check was performed in 2021 of a facility which appeared to have 4 individuals of the other species <i>Oxyura guttata</i> .
Netherlands	There are no records of escapes. It is unknown how many of the ruddy ducks that were held in 2016 are still alive.
United Kingdom	Education and shooting of any free-flying birds

- Q9: How confident are you that you understand the risk of escape accurately? If your answer is 'an estimate' or 'it is not possible to assess accurately', please explain what actions are being taken to address this.

Belgium	The captive population is now considered to be phasing out, and is not considered an important risk anymore.
Germany	The total number of ducks in captivity is not known. Hence, it is not possible to calculate the risk of escape.
Netherlands	Keeping and breeding ruddy ducks is forbidden as of 2016. Birds that were held in 2016 fall under the transitional provisions and will eventually die

- Q11: Do you know of or suspect any Ruddy Ducks to have escaped from captivity in the last 18 months? If your answer is 'Yes', please give details.

United Kingdom	Free-flying Ruddy Ducks shot during control measures for AI at exotic waterfowl breeder.
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Appendix 2: information provided by Tier 1 and 2 Contracting Parties by email

The following is the information (written verbatim) provided by email.

Malta: With reference to Recommendation No. 209 (2020) on the eradication of the Ruddy Duck in the Western Palaearctic by 2025, please note that Malta has no wild ruddy duck populations and/or populations in captivity, and current monitoring actions by Malta indicate the species is only a very occasional vagrant. For this reason, we are attaching a nil report for your due consideration.

Notwithstanding this, in relation to the implementation of the Bern Convention and the obligations under the EU Invasive Alien Species Regulation mentioned in the afore cited Recommendation, Malta adopted the Control of Invasive Alien Species of European Union Concern Regulations (SL 549.119), which includes the ruddy duck; the Flora, Fauna and Natural Habitats Protection Regulations (S.L. 549.44); and the National Strategy for Preventing and Mitigating the Impact of Invasive Alien Species in the Maltese Islands. The implementation of these legal instruments and policies also included stakeholder meetings and publication of information material.

For more information:

<https://era.org.mt/era-topic-categories/invasive-alien-species/>

<https://era.org.mt/national-strategy-for-preventing-and-mitigating-the-impact-of-invasive-alien-species-ias-in-the-maltese-islands/>

<https://era.org.mt/legislation-policy/national-environmental-policies/>

Montenegro: For the purpose of completing the Questionnaire for the Reporting Recommendation No. 209 (2020) on the eradication of Rudy Duck, we consulted the organisations and institutions that work in the area of environment protection and monitoring. We inform that not a single Rudy Duck has been recorded in the wild in Montenegro, nor has the keeping of the Rudy Duck in captivity been recorded. During the annual monitoring, this species was not recorded. We also point out that this species is not registered in the register of the owner of wild animals kept by the Environmental Protection Agency. Since we didn't receive any data on Rudy Duck, we were not able to fill out the questionnaire.

Appendix 3: additional information provided by Tier 1 and 2 Contracting Parties

The following is the additional information (written verbatim) provided in the questionnaires. Not all countries provided additional information.

- Q3. If you would like to supply any further information regarding Ruddy Ducks in captivity in your country please do so in the box below.

Hungary	As it is not legal to keep Ruddy Ducks in captivity in Hungary, and no intention for that has been observed so far, there is no need to develop a monitoring system specifically for the species.
Norway	EU regulations apply in Norway as an EEA country. When importing poultry and hatching eggs from other countries, there are general provisions. The importer and first recipient must be registered with the Norwegian Food Safety Authority before importation or importation takes place. All trade in live animals is registered in a common EU database called TRACES. Poultry and hatching eggs that are introduced or imported into Norway in connection with trade must come from approved poultry operations and not originate from countries or areas in countries that are subject to restrictions due to infectious diseases.
Poland	The Ruddy Duck has been included in the Polish legislation on the list of invasive species posing a threat to the European Union which is subject to rapid eradication. In accordance with the Act of 11 August 2021 on alien species (Journal of Laws of 2021, item 1718) a system of permits has been introduced. The General Director of Environmental Protection is the competent authority for issuing a possible permit, after fulfilling the relevant prerequisites in accordance with EU regulations, for prohibited activities with respect to specimens of the Ruddy Duck. As of June 6, 2023, no application for Ruddy Duck had been received, and consequently no permit for keeping or breeding of these individuals had been issued. Therefore, there is no official information on individuals kept in captivity in Poland. However, it cannot be ruled out that individuals of the Ruddy Duck are kept illegally in private breeding facilities.
Croatia	Since the Ruddy duck is one of the invasive alien species of Union concern (Union list), in line with the Art.7 of the Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species, it is prohibited to hold Ruddy duck in captivity, including in controlled conditions. Derogations from these prohibitions can be permitted only for research on, or ex-situ conservation of, invasive alien species of Union concern, or in exceptional cases, for reasons of compelling public interest, including those of a social or economic nature. Also, owners of companion animals not kept for commercial purposes that belong to the invasive alien species included on the Union list are allowed to keep them until the end of the animals' natural life, provided the animals were kept before their inclusion on the Union list and they are now kept in contained holding and all appropriate measures are put in place to ensure that reproduction or escape are not possible. Republic of Croatia did not permit derogations from the prohibitions for Ruddy duck, nor has reported specimens being kept in captivity as companion animals.

Appendix 4: questions and answers used in the questionnaire for Tier 3 Contracting Parties, 2023

TARGETS, OUTCOMES AND ACTIONS		
Ruddy Ducks in the wild		
Questions		Answer options
Q1	Will Ruddy Ducks be functionally extinct in your country by 2025?	<ul style="list-style-type: none"> • Yes - we are confident they will be • No - it is unlikely • They are already extinct
Q2	Are the status and distribution of non-breeding Ruddy Ducks monitored in the wild in your country? (surveys at any time of year to assess numbers present)	<ul style="list-style-type: none"> • Completely • Largely • Partly • No
Q3	Do the surveys provide an accurate assessment of non-breeding Ruddy Duck numbers and status in your country?	<ul style="list-style-type: none"> • Completely • Largely • Partly • No
Q4	Are the status and distribution of breeding Ruddy Ducks monitored in the wild in your country? (surveys specifically to record breeding occurrence and assess numbers of breeding pairs)	<ul style="list-style-type: none"> • Completely • Largely • Partly • No
Q5	Do the surveys provide an accurate assessment of breeding Ruddy Duck numbers and status in your country?	<ul style="list-style-type: none"> • Completely • Largely • Partly • No
Ruddy Ducks in captivity		
Questions		Answer options
Q6	Is the number of captive Ruddy Ducks and keepers in your country known?	<ul style="list-style-type: none"> • Yes - largely or completely • Partly • Only poorly or not at all
Q7	When will the numbers of captive birds and keepers be accurately known?	<ul style="list-style-type: none"> • 2022 • 2023 or 2024 • 2025 or after • Already in place
Q8	What is the risk that a bird could escape from captivity?	<ul style="list-style-type: none"> • There is some risk • The risk is low • The risk is highly unlikely • The risk is unknown • No Ruddy Ducks held in captivity

Q9	How confident are you that you understand the risk of escape accurately?	<ul style="list-style-type: none"> • The risk is reasonably well understood • The risk is an estimate / best guess • It is not possible to assess the risk accurately • No Ruddy Ducks held in captivity
Q10	When will you be able to assess the risk of escape reasonably accurately?	<ul style="list-style-type: none"> • 2024 or before • 2025 or 2026 • 2027 or after • No Ruddy Ducks held in captivity
Q11	Do you know of or suspect any Ruddy Ducks to have escaped from captivity in the last 18 months?	<ul style="list-style-type: none"> • Yes • No • No Ruddy Ducks held in captivity

STATUS OF RUDDY DUCKS				
Question				
I. Non-breeding birds				
Please provide estimates of the numbers of wintering and summering birds in the wild.				
Wintering birds, i.e. between 1 September and 31 March				
	2019/20	2020/21	2021/22	2022/23
1.1 Peak wintering numbers e.g. between 1 September 2022 and 31 March 2023				
1.2 Number of sites with wintering birds				
1.3 Quality of estimate *	select	select	select	select
*Key: 1 = coverage of sites largely complete and representative; 2 = partial coverage of sites only; 3 = expert guess				
Summering birds, i.e. between 1 April and 31 August				
	2020	2021	2022	2023†
1.4 Peak summering numbers e.g. between 1 April and 31 August 2022 † between 1 April 2023 and current date				
1.5 Number of sites with summering birds				
1.6 Quality of estimate *	select	select	select	select
* Key: 1 = coverage of sites largely complete and representative; 2 = partial coverage of sites only; 3 = expert guess				
II. Breeding birds				
Please provide estimates of the numbers of BREEDING PAIRS (not simply summering birds) in the wild.				
2.1 Number of breeding pairs				
2.2 Number of sites where breeding occurred				
2.3 Quality of estimate *	select	select	select	select
*Key: 1 = coverage of sites largely complete and representative; 2 = partial coverage of sites only; 3 = expert guess				
III. Birds in captivity				

Please provide estimates of the numbers of birds in captivity.				
	2020	2021	2022	2023
3.1 Number of birds				
3.2 Number of collections with Ruddy Ducks				
3.3 Number of collections where breeding occurred				
3.4 Quality of estimate *	select	select	select	select

*Key: 1 = coverage of collections largely complete and representative; 2 = partial coverage of collections only; 3 = expert guess

IV. Birds controlled in the wild
Please specify the numbers of birds or nests controlled and the number of sites at which control took place

4.1 Number of birds controlled (e.g. between 1 April 2022 and 31 March 2023)	2019/20 2020/21 2021/22 2022/23			
Total				
If known please specify:				
Number of adult males				
Number of adult females				
Number of first-year males				
Number of first-year females				
Number of unknown age/sex				
4.2 Number of sites where birds were controlled				
	2020	2021	2022	
4.3 Number of nests controlled				
4.4 Number of sites where nests were controlled				

Appendix 5: questions used in the questionnaire for Tier 1 and 2 Contracting Parties, 2023

Number of Ruddy Ducks in the wild									
Please provide details of Ruddy Ducks that have been seen in the wild in your country since 1 April 2022.									
1. If Ruddy Ducks have not been seen please write NIL in the box to the right. <input type="text"/>									
2. If Ruddy Ducks have been seen in your country please complete the table below									
1. Observations			2. Control				3. Breeding attempts		
Site name or region where Ruddy Ducks were seen	Date: month and year	Total number of Ruddy Ducks seen	Was control attempted? Please answer YES or NO	If yes, how many birds were culled?	If no, please say why	Were birds observed in pairs? Please answer YES or NO	If yes, how many pairs were seen?	Was breeding attempted? Please answer YES or NO	If yes, please give details (e.g. nests observed, ducklings observed)

Numbers of Ruddy Ducks in captivity		
Please provide details of Ruddy Ducks held in captivity in 2022 and 2023.		
1. If Ruddy Duck are not held in captivity in your country please write NIL in the box to the right <input type="text"/>		
2. If Ruddy Duck are known to be held in captivity in your country please complete the table below		
	2022	2023
Number of Ruddy Ducks held in captivity		
Number of collections holding Ruddy Ducks in captivity		
3. If you would like to supply any further information regarding Ruddy Ducks in captivity in your country please do so in the box below.		