

UK NON-NATIVE ORGANISM RISK ASSESSMENT SCHEME Version 3.3

Prepared by CABI Bioscience (CABI), Centre for Environment, Fisheries and Aquaculture Science (CEFAS), Centre for Ecology and Hydrology (CEH), Central Science Laboratory (CSL), Imperial College London (IC) and the University of Greenwich (UoG) under Defra Contract CR0293, February 2005.

NOTE: This template contains minimal help and background. Please refer to the User Manual and examples of best practice when using this scheme.

	Name of Organism, Pathway, Receptor or Policy	<i>Myiopsitta monachus</i> - Monk Parakeet	
	Objectives:	Assess the risks posed by the Monk Parakeet	
	Authors, Date, Draft:		
N	QUESTION	RESPONSE	COMMENT
1	What is the reason for performing the Risk Assessment?	A request is made for an assessment of the likely future spread and impacts of an organism in the Risk Assessment area	
2	What is the Risk Assessment area?	Great Britain	
3	Does a relevant earlier Risk Assessment exist?	NO OR UNKNOWN (Go to 5)	
4	If there is an earlier Risk Assessment is it still entirely valid, or only partly valid?		
	Stage 2: Organism Risk Assessment SECTION A: Organism Screening		
5	Identify the Organism. Is the organism clearly a single taxonomic entity and can it be adequately distinguished from other entities of the same rank?	YES (Give the full name & Go to 7)	<i>Myiopsitta monachus</i> - Monk Parakeet
6	If not a single taxonomic entity, can it be redefined?		
7	Is the organism in its present range known to be invasive, i.e. to threaten species, habitats or ecosystems?	YES (Go to 9)	The Monk Parakeet is considered an agricultural pest in Uruguay (Mott, 1973) and throughout its native range (Navarro <i>et al.</i> , 1992). In the U.S.A it is also becoming an agricultural pest in Florida (Tillman <i>et al.</i> , 2000) and has been observed damaging crops in New Jersey, New York, Ohio and California (Davis, 1974). Monk parakeets frequently dominate feeding areas (South & Pruett-Jones, 2000) and have been reported to kill native birds (Davis, 1974).
8	Does the organism have intrinsic attributes that indicate that it could be invasive, i.e. threaten species, habitats or ecosystems?	YES or UNCERTAIN (Go to 9)	Able to survive in cold temperatures (South & Pruett-Jones, 2000). Will nest in all manner of trees (Sol <i>et al.</i> , 1997) as well as artificial structures (Eberhard, 1996). Although largely granivorous they will also eat leaf buds, blossoms, fruits, nut, berries, and insects (Long, 1981).
9	Does the organism occur outside effective containment in the Risk Assessment area?	YES (Go to 10)	Two known populations in Castle Combe, Wiltshire and Boreham Wood, Hertfordshire, only the later is reported to be breeding (Ogilvie, 2004). Previously populations have existed in Cheshire and Devon, although these appear to have died out (Butler, 2002). The population in Devon is reported to have died out as a result of change in land management (Grant, 1996) whereas no reason is reported for the Cheshire population decline (Gabb <i>et al.</i> , 1993).
10	Is the organism widely distributed in the Risk Assessment area?	NO (Go to 11)	
11	Does at least one species (for herbivores, predators and parasites) or suitable habitat vital for the survival, development and multiplication of the organism occur in the Risk Assessment area, in the open, in protected conditions or both?	YES (Go to 12)	Monk parakeets will build nests in a wide variety of tree species (Sol <i>et al.</i> , 1997) as well as man-made structures (Avery <i>et al.</i> , 2002). They are generalist feeders, consuming seed, fruits, flowers and buds (South & Pruett-Jones, 2000) as well as insects (Long, 1981).
12	Does the organism require another species for critical stages in its life cycle such as growth (e.g. root symbionts), reproduction (e.g. pollinators; egg incubators), spread (e.g. seed dispersers) and transmission, (e.g. vectors)?	NO (Go to 14)	
13	Is the other critical species identified in question 12 (or a similar species that may provide a similar function) present in the Risk Assessment area or likely to be introduced? If in doubt, then a separate assessment of the probability of introduction of this species may be needed.		
14	Does the known geographical distribution of the organism include ecoclimatic zones comparable with those of the Risk Assessment area or sufficiently similar for the organism to survive and thrive?	YES (Go to 16)	Monk parakeets are native to subtropical and temperate South America where they inhabit grassland, scrub and forest regions (Long, 1981). They have successfully colonised subtropical and temperate North America and well as many temperate European countries with similar ecoclimatic conditions to the risk assessment area (Munoz & Real, 2006).

15	Could the organism establish under protected conditions (e.g. glasshouses, aquaculture facilities, terraria, zoological gardens) in the Risk Assessment area?		
16	Has the organism entered and established viable (reproducing) populations in new areas outside its original range, either as a direct or indirect result of man's activities?	YES (Go to 17)	Monk parakeets are successfully breeding in several states of the U.S.A. (Van Bael & Pruett-Jones, 1996), Puerto Rico (Lever, 1987), Spain, Italy, Belgium and the Czech Republic (Munoz & Real, 2006).
17	Can the organism spread rapidly by natural means or by human assistance?	YES (Go to 18)	In the U.S.A. Monk parakeet populations have grown exponentially (Van Bael & Pruett-Jones, 1996) and simulations have shown that in order to now reduce the populations a massive management effort would be required. Similarly, in Spain, Monk parakeet populations have dramatically increased both in numbers and in range (Sol <i>et al.</i> , 1997), which is attributable in large part to human activity (escapes, releases and feeding), although topography and climate also influence the expansion (Munoz & Real, 2006).
18	Could the organism as such, or acting as a vector, cause economic, environmental or social harm in the Risk Assessment area?	YES OR UNCERTAIN (Go to 19)	In an urban setting, some may feel that the large nests are unsightly and the noise that Monk parakeets can produce may be a serious nuisance (Davis, 1974). Tillman <i>et al.</i> (2000) report that damage to orchards was increased thirty fold where Monk parakeets were present, although there has been no massive agricultural damage as had been predicted thirty years ago (Spreyer & Bucher, 1998). In Argentina the damage caused is locally severe but is also thought to be over-stated by farmers (Bucher, 1992). They are also known to cause damage to utility structures (Avery <i>et al.</i> , 2006). Davis (1974) reported that Monk parakeets had been observed killing native birds and it is likely that competition for food would limit resources available for natives. Monk parakeets can also carry several diseases that could be passed on to wild birds and poultry (Newcastle Disease) and humans (psittacosis) (Stafford, 2003).
19	This organism could present a risk to the Risk Assessment area and a detailed risk assessment is appropriate.	Detailed Risk Assessment Appropriate GO TO SECTION B	
20	This organism is not likely to be a harmful non-native organism in the Risk Assessment area and the assessment can stop.		

B SECTION B: Detailed assessment of an organism's probability of entry, establishment and spread and the magnitude of the economic, environmental and social consequences				
Probability of Entry		RESPONSE	UNCERTAINTY	COMMENT
1.1	List the pathways that the organism could be carried on. How many relevant pathways can the organism be carried on?	moderate number - 2	LOW - 0	Importation for pet trade (releases and escapes) and natural spread (flight), although dispersal capacity should be slow due to their sedentary nature. It should be noted that captive breeding of parakeets inside the Risk Assessment Area is highly likely to supply the pet trade and also act as a direct source of escapees.
1.2	Choose one pathway from the list of pathways selected in 1.1 to begin the pathway assessments.	Importation for pet trade		
1.3	How likely is the organism to be associated with the pathway at origin?	very likely - 4	LOW - 0	They have already been associated with the pathway in that they have been imported to the Risk Assessment Area.
1.4	Is the concentration of the organism on the pathway at origin likely to be high?	very likely - 4	LOW - 0	They are considered to be a common species at origin. Generally unknown numbers imported to Europe although CITES report 5,215 imported to the United Kingdom between 1975 and 2007. CITES reports that 287,137 were imported to the U.S.A. in the same period.
1.5	How likely is the organism to survive existing cultivation or commercial practices?	very likely - 4	LOW - 0	They have been purposefully imported. The EU introduced a permanent ban on the importation of wild birds (Commission Regulation (EC) No 318/2007), effective from July 2007, which is likely to have a major impact on trade.
1.6	How likely is the organism to survive or remain undetected by existing measures?	unlikely - 1	LOW - 0	Large, colourful, highly vocal and very distinct from native birds.
1.7	How likely is the organism to survive during transport /storage?	likely - 3	LOW - 0	Large volumes of birds are imported in order to compensate for the high mortality rates during transportation. However, high numbers can survive.
1.8	How likely is the organism to multiply/increase in prevalence during transport /storage?	very unlikely - 0	LOW - 0	Stress and conditions during transportation make it unlikely birds will reproduce.
1.9	What is the volume of movement along the pathway?	moderate - 2	HIGH -2	Potentially very high, given that Argentina alone is reported by CITES to have exported over 200,000 in the past 25 years.
1.10	How frequent is movement along the pathway?	occasionally - 2	HIGH -2	See above (1.09), given that hundreds of thousands can be exported, frequency could be very high.
1.11	How widely could the organism be distributed throughout the Risk Assessment area?	widely - 3	MEDIUM -1	Urban populations seem most likely to initially increase and they could then act as source populations for birds living outside of urban and semi-urban environments.
1.12	How likely is the organism to arrive during the months of the year most appropriate for establishment ?	likely - 3	MEDIUM -1	Importation is likely to be year round depending on demand in the trade.
1.13	How likely is the intended use of the commodity (e.g. processing, consumption, planting, disposal of waste, by-products) or other material with which the organism is associated to aid transfer to a suitable habitat?	very likely - 4	LOW - 0	The parakeets are the commodity. They will only pose a risk if they escape or are released.
1.14	How likely is the organism to be able to transfer from the pathway to a suitable habitat?	very likely - 4	LOW - 0	Should a large enough market build up, escapes are highly likely and often deliberate when owners feel unable to look after their pets.

	Probability of Establishment	RESPONSE	UNCERTAINTY	COMMENT
1.15	How similar are the climatic conditions that would affect establishment in the Risk Assessment area and in the area of current distribution?	similar - 3	LOW - 0	Monk parakeets exist and breed successfully in a wide variety of climatic conditions, including those experienced in the risk assessment area (Munoz & Real, 2006, Lever, 2007, and Long, 1981).
1.16	How similar are other abiotic factors that would affect establishment in the Risk Assessment area and in the area of present distribution?	similar - 3	LOW - 0	Colonisation has occurred in urban areas across North and South America, Asia and Europe and several countries have similar environments (Munoz & Real, 2006, Lever, 2007, and Long, 1981).
1.17	How many species (for herbivores, predators and parasites) or suitable habitats vital for the survival, development and multiplication of the organism species are present in the Risk Assessment area? Specify the species or habitats and indicate the number.	very many - 4	LOW - 0	They are generalist feeders and have proven their ability to adapt to foreign seed, leaf buds, blossoms, fruits, nut, berries, and insects (Long, 1981, and Hyman & Pruett-Jones, 1995). Similarly they can be very generalist nesters, able to use numerous tree species (Sol et al., 1997) as well as artificial structures (Eberhard, 1996).
1.18	How widespread are the species (for herbivores, predators and parasites) or suitable habitats vital for the survival, development and multiplication of the organism in the Risk Assessment area?	widespread - 4	LOW - 0	Habitat in typical urban and semi-urban locations of the risk assessment area has supported breeding populations (Oglivie, 2004) and Munoz & Real (2006) suggest that they may also be able to expand into other extensive human-modified habitats, such as farmland.
1.19	If the organism requires another species for critical stages in its life cycle then how likely is the organism to become associated with such species in the risk assessment area?	N/A	LOW - 0	
1.20	How likely is it that establishment will not be prevented by competition from existing species in the Risk Assessment area?	likely - 3	LOW - 0	They are robust and sometimes aggressive, having shown that they can dominate feeding areas in other countries they have colonised (South & Pruett-Jones, 2000).
1.21	How likely is it that establishment will not be prevented by natural enemies already present in the Risk Assessment area?	very likely - 4	LOW - 0	They are colonial breeders with a degree of cooperation in both breeding and vigilance for predators (Martin & Bucher, 1993). Nest predators might include squirrels but predators of the adults would be limited to cats and birds of prey. It seems unlikely these would exert sufficient pressure on an intelligent species to halt expansion.
1.22	If there are differences in man's management of the environment/habitat in the Risk Assessment area from that in the area of present distribution, are they likely to aid establishment? (specify)	unlikely - 1	MEDIUM -1	Urban management should be similar to that of other areas that have been successfully colonised. Extra-urban areas may differ to a degree e.g. with respect to timing of planting and harvesting crops.
1.23	How likely is it that existing control or husbandry measures will fail to prevent establishment of the organism?	very likely - 4	LOW - 0	There are no control measures in place currently. However, in the early stages of colonisation, populations can be extirpated by concerted management action (Manchester & Bullock, 2000, and Simberloff, 2003).
1.24	How often has the organism been recorded in protected conditions, e.g. glasshouses, elsewhere?	frequent - 3	MEDIUM -1	These parakeets are thought to be common pets, kept domestically as well as bred in the U.K. Number of captive birds has not been possible to ascertain, although CITES report that 5,215 were imported into the U.K. between 1975 and 2007.
1.25	How likely is the reproductive strategy of the organism and duration of its life cycle to aid establishment?	likely - 3	MEDIUM -1	To a certain extent they breed cooperatively with individuals sometimes delaying breeding in order to help (Martin & Bucher, 1993). Domed nests are built from twigs, which provide protection from harsh environmental conditions and predators. They have large clutch sizes, although fledging success appears to be lower than other parrots (Eberhard, 1998). They can produce second clutches in each breeding season.
1.26	How likely is it that the organism's capacity to spread will aid establishment?	moderately likely - 2	LOW - 0	They are considered largely sedentary and will often not forage more than 1.5km for food (Butler, 2005). Natural spread may be slow, but steady, although spread by further escapes and releases significantly boosts the rate of expansion (Hyman & Pruett-Jones, 1995, and Martin & Bucher, 1993).
1.27	How adaptable is the organism?	very adaptable - 4	LOW - 0	Sustainable populations exist in environmental conditions from about -10C to +40C (South & Pruett-Jones, 2000), they have adapted to nesting in artificial structures (Eberhard, 1996) and feeding on foreign foodstuffs including from bird feeders in gardens (Hyman & Pruett-Jones, 1995).
1.28	How likely is it that low genetic diversity in the founder population of the organism will not prevent establishment?	unlikely - 1	MEDIUM -1	This has not been reported in the existing literature. It does not seem to have affected existing populations' ability to colonise and form sustainable populations.
1.29	How often has the organism entered and established in new areas outside its original range as a result of man's activities?	very many - 4	LOW - 0	Sustainable populations have formed across South and North America in numerous states (Butler, 2005), in Asia (Lever, 1987) and in at least half a dozen European countries (Munoz & Real, 2006).
1.30	How likely is it that the organism could survive eradication campaigns in the Risk Assessment area?	unlikely - 1	LOW - 0	The existing population could be removed with relative ease, not withstanding potential public opposition to such attempts. If the population is allowed to grow substantially, then attempts to eradicate it will require much more resource and time (Pruett-Jones <i>et al.</i> , 2007).
1.31	Even if permanent establishment of the organism is unlikely, how likely is it that transient populations will be maintained in the Risk Assessment area through natural migration or entry through man's activities (including intentional release into the outdoor environment)?	likely - 3	LOW - 0	If they are imported as pets, they are likely to escape or be released and as such are likely to form at least transient populations. Several populations have existed in the Risk Assessment area already, one of which was eradicated and several of which died out naturally.

	Spread	RESPONSE	UNCERTAINTY	COMMENT
2.1	How rapidly is the organism liable to spread in the Risk Assessment area by natural means?	slow - 1	LOW - 0	They are largely considered to be sedentary, so natural spread would be slow (Martin & Bucher, 1993).
2.2	How rapidly is the organism liable to spread in the Risk Assessment area by human assistance?	intermediate - 2	MEDIUM -1	The speed of spread will depend on the extent of the trade and escape and release rates.
2.3	How difficult would it be to contain the organism within the Risk Assessment area?	with some difficulty - 2	LOW - 0	At the current population level, if feral individuals are eradicated rapidly and the pet trade is limited, then containment would be relatively easy albeit controversial. Should the population be allowed to increase then containment would become significantly more difficult.
2.4	Based on the answers to questions on the potential for establishment and spread define the area endangered by the organism.			The entire Risk Assessment area. Urban and semi-urban areas are particularly at risk.

	Impacts	RESPONSE	UNCERTAINTY	COMMENT
2.5	How important is economic loss caused by the organism within its existing geographic range?	moderate - 2	MEDIUM -1	Few studies provide convincing evidence of widespread agricultural damage, although there is little doubt that they are capable of causing severe local damage (Tillman <i>et al.</i> , 2000). There have been reports of increased power outages in colonised areas due to damage to utility structures caused by nests (Pruett-Jones <i>et al.</i> , 2007). Diseases carried could cause damage to poultry flocks if a pathway of transmission exists.
2.6	Considering the ecological conditions in the Risk Assessment area, how serious is the direct negative economic effect of the organism, e.g. on crop yield and/or quality, livestock health and production, likely to be? (describe)	minor - 1	HIGH -2	Unknown, although a few studies suggest severe local damage to crops (Tillman, <i>et al.</i> , 2000) and damage to utility structures (Avery & Greiner, 2002). There are already some reports of Ring-necked parakeets, <i>Psittacula krameri</i> , dramatically reducing outputs from at least one vineyard in the Risk Assessment Area (Hamilton, 2004). The crop damage may be mitigated by the fact that initial colonisation is most likely to be in urban and semi-urban areas (Munoz & Real, 2006, and South & Pruett-Jones, 2000). Munoz & Real (2006) suggest that expansion into other extensive human-modified habitats, such as farmland might be possible, although in Chicago, South & Pruett-Jones (2000) report that during the harsh winter months, feeding is essentially limited to seed provided by gardeners, which might significantly confound expansion.
2.7	How great a loss in producer profits is the organism likely to cause due to changes in production costs, yields, etc., in the Risk Assessment area?	minor - 1	MEDIUM -1	See above.
2.8	How great a reduction in consumer demand is the organism likely to cause in the Risk Assessment area?	minimal - 0	MEDIUM -1	No effect detected.
2.9	How likely is the presence of the organism in the Risk Assessment area to cause losses in export markets?	minor - 1	MEDIUM -1	If diseases are transferred to poultry, export could be affected but risk is low.
2.10	How important would other economic costs resulting from introduction be? (specify)	moderate - 2	MEDIUM -1	Moderate funds required for monitoring and potential control. Should populations become more settled and expand, potential maintenance costs of utility structures.
2.11	How important is environmental harm caused by the organism within its existing geographic range?	moderate - 2	HIGH -2	Little data exists relating to significant environmental damage. Locally, buds can be stripped from trees and some aggression has been reported, including dominance of feeding areas.
2.12	How important is environmental harm likely to be in the Risk Assessment area?	moderate - 2	MEDIUM -1	Competition with native birds for food resources could be significant. Should large populations thrive, then local vegetation could suffer for loss of leaf buds.
2.13	How important is social and other harm caused by the organism within its existing geographic range?	moderate - 2	MEDIUM -1	Complaints by residents of noise nuisance have been reported, power outages increased and garden birds reportedly displaced.
2.14	How important is the social harm likely to be in the Risk Assessment area?	moderate - 2	MEDIUM -1	Similarly, complaints about noise nuisance seems to be the most likely harm as well as displacement of garden birds. Power outages possible and disease transmission is theoretically possible, but no reports exist.
2.15	How likely is it that genetic traits can be carried to native species, modifying their genetic nature and making their economic, environmental or social effects more serious?	very unlikely - 0	LOW - 0	No genetically similar native species exist.
2.16	How probable is it that natural enemies, already present in the Risk Assessment area, will have no affect on populations of the organism if introduced?	likely - 3	MEDIUM -1	Natural enemies do not appear to have halted ring-necked parakeet expansion and Monk parakeets have the added advantage of colonial breeding and therefore increased vigilance.
2.17	How easily can the organism be controlled?	with some difficulty - 2	MEDIUM -1	At low population levels, extermination has been successfully achieved. As the population increases, management and extermination is likely to become a long, expensive and controversial process.
2.18	How likely are control measures to disrupt existing biological or integrated systems for control of other organisms?	unlikely - 1	LOW - 0	Several methods of extermination (e.g. shooting, nest destruction) are very specific and will not disrupt other organisms.
2.19	How likely is the organism to act as food, a host, a symbiont or a vector for other damaging organisms?	moderately likely - 2	MEDIUM -1	They can carry diseases that could be damaging to native birds and potentially to the poultry industry and even to humans. No outbreaks have yet been reported or attributed to this pathway of transmission.
2.20	Highlight those parts of the endangered area where economic, environmental and social impacts are most likely to occur			Colonisation, if allowed to continue, will likely be limited to urban and semi-urban areas in the first couple of decades as in Spain (Munoz & Real, 2006) and the U.S.A. (South & Pruett-Jones, 2000).

Summarise Entry	likely - 3	LOW - 0	The Monk parakeet has established populations across the world as a result of trade. Unless trade is halted in the risk assessment area, entry is likely due to escapes and releases.
Summarise Establishment	likely - 3	LOW - 0	Although establishment can take many years, there is currently a population of ~60 Monk parakeets already in the risk assessment area. Such small numbers are still susceptible to natural extinction, but as has been shown in similar temperate countries, Monk parakeets can establish large self-sustaining populations in time.
Summarise Spread	intermediate - 2	LOW - 0	Once established, Monk parakeet spread by natural means is likely to be slow due to their sedentary nature. However, continued trade is likely to be the main contributory factor in establishment of new populations and bolstering of existing ones.
Summarise Impacts	moderate - 2	MEDIUM -1	The Monk parakeet is considered an agricultural pest in its native South American range, although recent reports indicate that damage is severe locally, but less significant regionally. It is also reported to be an agricultural pest in some areas of the United States and could damage fruit and grain crops in the risk assessment areas if very large populations are allowed to establish themselves. Damage to artificial structures as a result of colonial nest building is likely, as well as some noise nuisance. There is potential for disease transmission to wild native birds, poultry and theoretically to humans. Although there is unlikely to be competition with native birds for nesting sites, competition for food may be an issue since Monk parakeets are known to dominate feeding areas and act aggressively to competitors.
For pathway/policy risk assessment Assess the potential for establishment and economic/environmental/social impacts of another organism or stop			
Conclusion of the risk assessment	MEDIUM -1	LOW - 0	Although importation of pet birds either from within the EU or outside of it is not prohibited, it is only allowed under specific licence requiring 35 days of quarantine (Defra website, 2007). Since birds may still be brought into the country as pets, a relatively high risk exists of escaped and released birds forming feral populations in urban and semi-urban areas.
Conclusions on Uncertainty		LOW - 0	This risk assessment is based on scientific literature relating to existing populations of Monk parakeets both in their native range and where they have been introduced. There is no uncertainty about the fact that Monk parakeets have very successfully colonised many countries across the world, including ones with similar abiotic and biotic conditions to those found in the risk assessment area.
Should risk management options be considered?	YES (Go to Risk Management)		

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