Valium against leg cramp in waders

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On five different occasions Knots *Calidris canutus* and Oystercatchers *Haematopus ostralegus* suffering from leg cramp were successfully treated with valium (diazepam). They recovered, in several cases after a period of deep sleep. Although valium was applied on only two wader species, we suspect that it may generally be applicable. We suggest that valium-tablets (of e.g. 1 mg) are henceforth at hand during catching ...operations to try and treat any victims of leg cramp.

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It is incredibly annoying when a successful catch of waders ends in a partial disaster with several birds showing leg cramp, fluttering over the ground, unable to walk and to take off. It mostly occurs in large and long-legged wader species (Green 1978), and under conditions of thermal stress (Purchase & Minton 1982; pers. obs.). No wonder that wader workers have discussed this problem for years (Bainbridge 1975; Green 1978, 1980; Stanyard 1979; Minton 1980; Minton & Purchase 1982; Melville 1982).

Physiological studies indicate that leg cramp, or myopathy, is indicative of muscle fibre damage and enzyme leakage into the blood, e.g. caused by an impaired blood supply (van Heerden 1977; Henschel & Louw 1978). People have sought to prevent the problem by building appropriate keeping cages (Bainbridge 1975; Stanyard 1979) or to rescue waders fallen victim to leg cramp by massaging their leg muscles (Stanyard 1979; and ourselves). Attempts to save cramped birds by suspending them in a sling with the stressed legs dangling, in a quiet room until the birds are able to walk again, is labour-intensive and has met with variable, but generally little success (Green 1978; N.Clark pers. comm.; pers. obs.).

Several times we had leg-cramped waders during our catching activities on the Banc d'Arguin, Mauritania (Ens *et al.* 1989, 1990). One day, somebody (most probably Jaap de Vlas) suggested to use valium (diazepam) to alleviate the birds' problems, since valium is a well known psychopharmaceutical used to treat muscle spasms and cramp in humans. In this note we report on the use of valium under field and laboratory conditions in helping relieve waders of their leg cramp.

During fieldwork on the Banc d'Arguin, on 5 and 6 March 1986, we mist-netted respectively 3 and 9 Knots *Calidris canutus* which were subsequently kept in outdoor aviaries for feeding balance studies. On 7 March one of the first catch developed leg cramp. At first, we suspended this bird in a sling, but this failed to bring relief. After the suggestion of using valium, we suspended a human valium tablet of 5 mg in water, mixed it with minced food pellets and administered this soft wet mass with a syringe to the bird. The next day this Knot appeared to be in perfect condition and it remained so afterwards. On 9 March, after handling the birds for a while, another Knot developed leg cramp. This bird was also given some valium in the same way as previously and again it recovered overnight.

Again on the Banc d'Arguin, in late October 1988, an Oystercatcher *Haematopus ostralegus* was found more dead than dying in a mistnet. Back at basecamp in the early morning it was still breathing and was given a calm and cool place to revive. However, for the rest of the day it remained pretty much "unconscious" . In the evening it was given parts of a 5 mg valium tablet dissolved in ca. 30 ml of water and mixed with minced food pellets, applied as previously to the Knots. It was sitting up on its belly within 1.5 hr and was standing upright after another hour. The next morning the Oystercatcher was released, after which it immediately started foraging in the tideline.

In the night of 17 January 1991 ten Knots were captured at Langebaan Lagoon, South Africa by L.G.Underhill and co-workers, put in a dark but well ventilated keeping box, taken back by car to Cape Town and immediately flown to Amsterdam, The Netherlands, where they arrived 24 hrs after their being caught. The birds were then carried to Texel, where they were released in a large indoor cage at room temperature with running fresh and salt water. Most birds looked perfect, but one showed signs of leg cramp, being unable to stand for long. Later that day a second bird showed the same problems while the first couldn't stand on its legs any longer at all.

Inspired by the Mauritanian pharmaceutical experience, the local chemist was visited and some human valium pills (2 mg), were obtained. Although humans can safely ingest a maximum of 1 mg/kg body mass (van Rossem 1989), it was decided that Knots of 120 g, with their typical high wader metabolism, would be able to endure half a pill, i.e. 1 mg. The two birds were force-fed half a pill, some 0.5 ml water and a Trouvit-(protein rich) food pellet. They sunk into a deep sleep in minutes, looking as though they would never wake up again. However, next morning, some 11 hrs after the treatment, they were happily standing or walking around in their cage! More than a day later,one of the treated birds showed again signs of cramp and was given another half-pill (1 mg valium). It again sunk into deep sleep for at least an hour, from which it was hardly possible to disturb it, and was walking around the following morning.

Sleep did not occur in the birds treated with valium in Mauritania. This may be due to the probable lower doses of valium (in view of the mixing with water and food before injection in the birds oesophagus) applied there.

Earlier evidence accumulated by Purchase & Minton (1982) suggested that capture stress may sometimes affect birds long after their release. Such birds, in their case heavy, premigrant, female Bar-tailed Godwits *Limosa lapponica,* were found being unable to walk or fly, several km away from the site of release and several days later. The Knots which remained under observation in captivity after their treatment, remained healthy and apparently fairly happy, which suggests that valium inflicts no long-term negative effects. However, we do not know, of course, the effects of valium on orientation in birds which are about to depart on long-distance migrations.

Our observations show that valium might provide a powerful medicament to solve the problem of leg cramp in captured wild waders. We suggest that waders between 20 and 90 g be treated with 0.25-0.5 mg, and larger species with 1 mg. The birds have to be kept safe from predators and disturbance, in a warm, but not a hot, place and in the dark during their period of sleep. They should usually be ready for release in 10-12 hrs. It would be advisable to give the birds fresh water to drink before release. Note that valium is not freely available on the market in all countries (no longer in The Netherlands, for instance), but a deal should easily be made with either your personal medical doctor or veterinarian. Note also that in some countries a licence for using valium on captured birds, issued by the appropriate administration, would be required (as in the UK).

We suggest that some further trials with valium, perhaps under more controlled conditions and with veterinary guidance, should be carried out. As part of this process of validation, valium could provisionally become part of the routine-equipment of (some) wader ringers and we look forward to hearing about future experiences elsewhere.

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EDITORIAL NOTE: In the light of the importance of this subject to wader ringers, we would be especially pleased to publish other observations on the efficacy of Valium as a cure for leg cramp in waders.

Radio-tracking of Golden Plover *Pluvialis apricaria* chicks

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A single brood of four Golden Plover chicks was tagged with 1g-radios, and followed for up to nine days by which time two had died, and the other two radio batteries failed. The technique enabled two chicks to be tracked over about 900 m, and their growth rate (c. 2.5g/day) and diet assessed. The technique has great potential for use on these and chicks of larger nidifugous birds.

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INTRODUCTION

All wader chicks are well camouflaged, highly mobile, and most of them are nidifugous, foraging for themselves. This makes it very difficult to follow individual chicks from hatching to fledging, so that there are very few studies of growth rates or mortality rates in field conditions. (Exceptions include studies of Lapwing *Vanellus vanellus* by Galbraith 1988 and Baines 1990, Redshank *Tringa totanus* by Thompson & Hale 1990, Snipe *Gallinago gallinago* by Green 1985 and Common Sandpiper *Actitis hypoleucos* by Holland & Yalden 1991).

These problems are particularly acute with Golden Plover *Pluvialis apricaria*; the chicks are certainly well camouflaged and highly mobile, but in addition the very open habitat, attentiveness of the adults and their overt alarming behaviour make it impossible to approach within 200 m of the chicks; the chicks stay hidden, and are invisible at that range, and the adults will not go back to their chicks while an observer remains in the area (Byrkjedal 1985; Yalden & Yalden 1989, 1990). Not surprisingly, there appear to be no published data on the growth rate of Golden Plover chicks, little on chick diet or early mortality, and not much on their habitat requirements (but see Parr 1980).

The use by Redmond & Jenni (1986) of small radio transmitters to mark chicks of Long-billed Curlew *Numenius americanus* enabled them to follow individual chicks, establishing both growth rates and causes of mortality. This prompted a limited trial of the technique on Golden Plover chicks in 1990.