



**FIG 5.36.** *The spotted silver dollar (Metynnis maculatus) is a good candidate for spawning with hormone injection. Note the concave line of the anal fin (the outward 'bulge' towards the front), which indicates that this fish is a male. In females, the anal fin has a straight edge with a small point at the end of the first ray (see FIG 5.37). (Photo courtesy of Neil Armstrong.)*

are used. This could mean injecting 15 fish which would require that amount or slightly less in total, or perhaps 7 fish which are known to need a second injection on the following day. Spotted silver dollars sometimes require a second injection.

- (c) Using a disposable 5 ml syringe and needle, one vial of the freeze-dried Chorulon 1500 IU is filled slowly (to avoid the formation of small bubbles) with 5 ml of the saline solution supplied with it. The hormone is then mixed by gently tipping the vial backwards and forwards. (5000 IU Chorulon can also be used at proportionately lower injection volumes, but the lower strength is safer to use with small fish.)
- (d) 10 mature male spotted silver dollars of about 70 to 80 mm in length and showing the brightest colours, and 5 mature females of about 80 to 90 mm in length showing spawning plumpness, are selected. From these, 5 separate groups of 2 males to 1 female are placed in small containers of water for tranquillizing. (Groups are roughly matched for size if there is a significant variation between individuals.) Note that other spawning group sizes, for instance 3 males to 2 females, can be used in the case of spotted silver dollars.

Sufficient tranquillizer (2-Phenoxyethanol) is administered to each container to cause the fish to roll onto their sides. The less the breeders move, the better, as flicking or jerking during injection must be avoided – *however breathing must still be visible*. After a minute or so, when the tranquillizer has taken effect, if necessary a little more tranquillizer or a little fresh water can be added to attain the right degree of effect. Typically, breeders will roll on their sides or even turn upside down – this is good – but they must continue to breathe.

- (e) While the fish are being tranquillized, a one millilitre syringe fitted with a no. 32 needle (commonly used for injecting insulin into humans) is filled with the hydrated hormone. If syringes are being re-used, the needle (not the whole syringe) should be held in near boiling water to disinfect it, then cooled before filling it. Any air bubbles present in the syringe are ejected by holding the syringe needle-up, tapping it, and carefully squirting them out.
- (f) Each fish is injected into the area shown in FIG 5.37, just below the dorsal fin, with the syringe and needle pointing forwards, slightly down and only slightly inwards to avoid hitting the backbone. It pays to inject all fish on the same side (and memorize the side) in case a second injection is needed on the following day, which can then be given on the opposite side. Damage is extremely easily inflicted if bones or body parts other than muscle tissue are struck by the needle. If obstructions are felt, the needle should be pulled back slightly and carefully repositioned.

The hormone is injected very slowly over about 15 seconds to avoid damage to muscle tissue. Once the required amount of hormone is injected, the needle is kept in place for a few more seconds to allow the hormone to disperse into the body tissue to avoid loss when the needle is withdrawn.

Males receive 0.2 to 0.3 ml of hormone, while females receive 0.3 to 0.4 ml, depending on the size of the individual fish. Only experience and successes can really reveal the subtleties of these adjustments, but the amounts given here are well within safety limits in terms of volume and strength for the size of fish. In practice this injection volume and number of fish will use between 4 and 5 ml of hormone in total, depending on accuracy of measurements and waste.