

SOUTH PACIFIC COMMISSION  
FOURTH TECHNICAL MEETING ON FISHERIES

Noumea, New Caledonia

(21 - 29 October 1970)

FORMALIN INJECTION INFORMATION

We have conducted several tests using formalin injection all of which have given very high kill rates on Acanthaster planci. (L).

Initially we used a regular 20 ml capacity syringe for the injections but we always injected only a 5 ml dosage in all our tests.

With the syringe and using a 90% formalin and 10% acetic acid solution we had 100% kill in aquaria using control tanks. On injecting 100 A. planci in situ using the same solution and syringe an approximately 90% kill rate was obtained. It was felt that the surviving starfish had been improperly injected due to the inefficient syringe.

In later tests the Ovijector Mark IV injection gun was used. The standard nozzle was too short to allow the diver to reach A. planci in Acropora patches and also endangered the divers' hand of being struck by the starfish spines. Upon request an extended nozzle was provided by Glaxo (NZ) which made the gun convenient to use and eliminated any possibility of hand injuries.

On three separate field tests using the gun 40 A. planci were injected in situ and then rechecked the following day for mortality rates. It is easy to tell the dead starfish after 24 hours as they begin to turn pink. The mortality rates were estimated at 90% for both a stock formalin and a 90% formalin 10% acetic acid solution. A solution of 25% formalin did not seem strong enough to kill A. planci efficiently using the 5 ml. dosage injection gun. It was felt that maximum efficiency was achieved by using a  $\frac{3}{4}$  inch needle and injecting the starfish with the gun's nozzle at a 30° angle to the aboral surface of the disc. The short needle does not penetrate through the starfish's body thus allowing the formalin to circulate in the body cavity.

In one test ten A. planci were carefully injected with a 5 ml dose of formalin and were then placed in a cage on the reef. The following day all 10 were dead.

Of the 10% which were not killed during field trials all suffered considerable damage. Normally they lost at least half of their body due to the injection. The remaining section of starfish may have recovered; however no evidence has ever been obtained that A. planci might be induced by injection to throw off arms thus reproducing asexually.

Our collection feasibility study in which we hired a group of young men to spear starfish was very successful. A cost of 1.83 cents per starfish for 9,860 collected in 10 days included outboard fuel, spears, wages and disposal. A considerable savings was noted over the suggested 5 cent bounty system with its costly administration. By equipping this same type of team with injector guns the cost should be reduced to .5 cents per starfish in infested areas.

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