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Male dolphin alliances in Shark Bay: changing perspectives in a 30-year study

Richard C. Connor ^a ... Michael KrÃ¼tzen ^b

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Highlights

â€¢ We review a 30-year study on male bottlenose dolphin alliances in Shark Bay, Western Australia.

â€¢ The study (Dolphin Alliance Project) describes the most complex alliance system outside of humans.

â€¢ Long-term observations have contributed greatly to our understanding of these alliances.

â€¢ The study provides insight into the evolution of large brains and intelligence in mammals.

Bottlenose dolphins, *Tursiops cf. aduncus*, in Shark Bay, Western Australia exhibit the most complex alliances known outside of humans. Advances in our understanding of these alliances have occurred with expansions of our study area each decade. In the 1980s, we discovered that males cooperated in stable trios and pairs (first-order alliances) to herd individual oestrous females, and that two such alliances of four to six, sometimes related, individuals (second-order alliances) cooperated against other males in contests over females. The 1990s saw the discovery of a large 14-member second-order alliance whose members exhibited labile first-order alliance formation among nonrelatives. Partner preferences as well as a relationship between first-order alliance stability and consortship rate in this “super-alliance”™ indicated differentiated relationships. The contrast between the super-alliance and the 1980s alliances suggested two alliance tactics. An expansion of the study area in the 2000s revealed a continuum of second-order alliance sizes in an open social network and no simple relationship between second-order alliance size and alliance stability, but generalized the relationship between first-order alliance stability and consortship rate within second-order alliances. Association preferences and contests involving three second-order alliances indicated the presence of third-order alliances. Second-order alliances may persist for 20 years with stability thwarted by gradual attrition, but underlying flexibility is indicated by observations of individuals joining other alliances, including old males joining young or old second-order alliances. The dolphin research has informed us on the evolution of complex social relationships and large brain evolution in mammals and the ecology of alliance formation. Variation in odontocete brain size and the large radiation of delphinids into a range of habitats holds great promise that further effort to describe their societies will be rewarded with similar advances in our understanding of these important issues.



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Keywords

alliance; bottlenose dolphin; social organization; social structure; *Tursiops cf. aduncus*

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where you can see the dance of shepherds with sticks, the dance of girls with a jug of wine on their heads, etc.

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