# BIOMORPHOLOGIKAL FEATURES OF FLIGHT MUSCLES OF SOME ANSERIFORMES

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This article describes the result of investigations of the flight muscles of some representatives of an order Anseriformes. These muscles are responsible for rainsing and lowering the wings during flight. It was established that pectoral muscle of Mandarin duck is developed in 6,44 times. Of bar-headed goose in 5,1 times and of snow goose in 5,58 times more than supra-coracoid muscle. It is stipulated by significant functional activity which accrues in the case of lowering during the flight. These functional loads are caused by the overcoming of air resistance in the gravitational field of the Earht. Study of systems and organs of animal organisms that are based on comparative anatomical research, was held for several centuries by many scientists. There was no exception also the study of muscles of birds shoulder joint. However, despite the fact that in 1899 the outstanding scientist of his time K. E. Lindemann [1] stated that "comparative anatomy is studied in the present time not perfect", as it remains today. This fully applies to the study of the flight muscles of birds.

In the study of muscular system of birds most valuable for the latitude of comparative anatomical material, remains to date are fundamental works of M. Furbrìnger [5-7], H. Gadova and E. Selenki [8,9].

In birds muscles are more differentiated, and their ratio of masses more than in reptiles. It is entrusted with higher mobility of birds and variety of made movements. From flight muscles primarily deserve the attention two: above coracoid muscle, which raises the wing and is disposed above him, thoracic muscle, which lowers the wing in flight. It should be noted that the thoracic muscles, in different types, are from 10 to 25% of the total mass of the bird and exceed weight of above coracoid muscle from 3 to 20 times. Particularly developed these muscles in birds that fly fast, maneuverable flight.

Materials and methods of research. Material for conducting our research were obtained from the scientific foundations of the anatomy of animals named after academician V.G. Kasjanenka chamber, fixed in 10% formalin solution, the corpses of some representatives of subfamily, including: white goose – Anser caerulescens, mountain goose – Anserindicus, mandarin duck – Aix galericulata and mallard – Anasplatyrhynchos. On corpses carried out normal anatomical preparation with the purpose of establishing the exact places of muscles fixation. Further investigated muscles weighed to set degree of their development and dissected for determining the presence of featherity.

Results of research. Our research has shown that thoracic and above coracoid muscles in investigated species have common points of fixation, but differ in the way of fixing. So thoracic muscle locks along the thoracic bone and collarbone, and ends in the area of deltoid crest of humerus. However, it should be noted that in the mountain and the white goose thoracic muscle partially differentiated into two layers, superficial and deep. To the keel of thoracic bone, it is connected with muscle-tendon in mountain goose and mallard, and at white goose with muscle. In addition, the white goose and mandarin duck ventral surface of the shoulder part of muscle is covered by aponeurosis. Concerning featherity, at mountain goose both layers are longitudinally-fibrous and at white goose – unipennate, however mandarin duck and mallard thoracic muscle bipennate, however more bipennate expressed in the mallard.

Above coracoid muscle in the Anseriformes subfamily, as in other birds is under the thoracic muscle along the keel of thoracic bone and the distal parts of the coracoid and ends with lateral hump of the humerus. In the investigated birds, it is bipennate, except the white goose, in which it is unipennate.

The degree of flight muscles development is due to the speed and duration of flight.

Greater development of chest muscle than above coracoid muscle suggests that raising the wing during flight requires, in investigated species, considerably less effort than his receding.